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APRIL 22, 1950

SCIENCE NEWS LETTER

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THE WEEKLY SUMMARY OF CURRENT SCIENCE

Dangerous Beauty

See Page 247

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TECHNOLOGY DEPT

PSYCHOLOGY-EDUCATION

From Now On: Talents

The abilities of people should be assayed to fit them to their best life work. Inquiry into the nature of talent, a search for it and a wider cultivation of it are needed.

By WATSON DAVIS

Fourth in a series of glances forward in science.

➤ FITTING the life work of people to their abilities is needed if there is to be happiness in the world. One of the essential by-products of happiness in this sense is that the work of the world is done more effectively.

Since the turn of the century much attention has been given to assaying human qualities and doing something about using them. There are tests that tell whether one is likely to succeed as a clerk or an atomic scientist, as a musician or a factory worker. The famous I.Q. tests arose from the First World War. There have been studies of genius and handicapped alike. Sometimes it has seemed that more time is spent upon our retarded children than upon our civilization's superintellects.

Psychologists, psychiatrists and educators alike wrestle with the continuing opportunity for growing minds in all fields and walks of life. We have come a long way from the days of the fabled little red school house and the beating of dumbness out of human hides with a ruler.

Something new has been added to higher education in the selection of those who are to go to college. More and more it is a matter of ability—intellectual talent—rather than the dollars in dad's bank account. More and more to be a college freshman, a boy or girl has to make the intellectual grade. But more and more those who have the talent it takes get to go to college.

College entrance bureaus have their examinations, interviews and other selection methods. Scouts from our big universities roam the nation each year looking over the high school senior crop—for brains, mind you.

For nine years now the annual national Science Talent Search for the Westinghouse Scholarships has been conducted by Science Service. This is an attempt to find and do something about high school seniors who show potential research ability. Scientists of the future are developing from those picked.

Only a small fraction of the babies born can be expected to become future Einsteins, Curies and Pasteurs. Few will compose great symphonies, write classic novels, or achieve world leadership. Aptitude or talent, wherever it may be, is a precious heritage of the world.

There is some talent in each of us. The supreme ability to flavor a soup, the superb craftsmanship in a welded joint, the skill of pitching a better ball game, the patient understanding of rearing little children—these and many more.

We need to know more about ability, talent, or whatever it is called. In the future, there should be:

A. Intensive inquiry into the nature of various abilities and the way they combine to achieve results in human beings. There is promise that traits can be discovered and analyzed much as the chemist assays promising ore for its chemical elements.

B. Conduct talent searches in all fields of human endeavor, particularly for occupations for which the world has great need. We have a great continuing need for scientists, for instance. The demand for scientists may be less obvious and enticing than that for good dance band players (I am assuming that there is more of an oversupply in that important occupation).

C. Broaden our education so that everyone has a chance to test his abilities and talents as widely as possible. There is no royal road to occupational success as American democracy has so effectively demonstrated. The laborer's home nurtured a great artist, and wealthy parents are no barrier to becoming a practical engineer.

D. Cultivate the neglected corners of our world for good human growth, regardless of its color, customs or culture. Point IV should winnow for quality in the population of every nation. There is great talent in the neglected areas.

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GEOLOGY

Uranium Via Test Tube

➤ HOW to make uranium ore in a test tube was described in Washington by four government scientists.

Their work will not put prospectors out of business, however, nor solve the supply problems of the atomic age. To make synthetic uranium minerals, you need uranium to start with, they said.

Dr. L. R. Stieff, K. J. Murata, Mrs. E. A. Cisney and Miss E. V. Zworykin of the U. S. Geological Survey told the Geological Society of Washington that artificially produced ores are being used to check the discoveries of prospectors in the field.

Value of such work was underlined recently in the announcement by Secretary of Interior Oscar L. Chapman that three hitherto unknown uranium minerals had been discovered in Arizona.

The ores, found by government geochemists, were identified positively by laboratory synthesis of each of the new compounds. They were named andersonite, swartzite and bayleyite.

Canary-yellow carnotite, major uranium ore in this country, was once used by Navajo Indians as a dye. A uranium-vanadium salt of potassium, it has been made in the Geological Survey's laboratories in the pure form, the researchers said. It can thus be better studied chemically, microscopically and by X-ray and electron beams.

The process, they explained, begins with other compounds of uranium and requires "cooking" over high-temperature steam for long periods of time. Study of the resulting compounds can throw light on how they are formed by nature and help scientists look for other new ores in the field.

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ENGINEERING

Invisible Moisture Films Make Graphite a Lubricant

➤ INVISIBLE thin films of moisture are what make graphite a lubricant, Robert H. Savage, General Electric scientist, has proved.

Electric brushes or contacts made of graphite and used to feed electric current to moving parts in motors or generators on high-altitude aircraft may have their useful life increased many thousands of times as a result of new lubrication methods devised by him.

It was long thought that graphite, a solid slippery material, was a good lubricant in itself. Graphite consists of layers of atoms which can slide easily over each other. It was formerly thought that this property was inherent in the graphite alone. The new discovery is that an invisible film of moisture is required for its lubrication.

Mr. Savage tested the wear of dry graphite brushes against a revolving copper disk in a vacuum chamber. Brushes were worn as fast as an inch an hour. When a small amount of water vapor was admitted to the chamber, the wear rate was reduced to less than a thousandth as much.

For electric motors and generators working on the ground, there is generally enough moisture in the atmosphere to provide the moisture film to the graphite. But modern aircraft fly at great altitudes with such low temperatures that water vapor is absent. Mr. Savage has devised a means of shielding the parts of electrical equipment where the brushes are used, and supplying water vapor to the space around them.

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NUTRITION

Drug Promotes Growth

The golden wonder drug, in addition to its curative properties, now accelerates growth by as much as 50 per cent.

➤ THE discovery that the golden drug aureomycin is a potent growth accelerator, producing effects beyond those obtainable with any known vitamin, was announced in a report to the American Chemical Society recently.

In animal experiments which cast the antibiotic in a spectacular new role, and which may hold enormous long-range significance for the survival of the human race in a world of dwindling resources and expanding populations, aureomycin has increased the rate of growth of hogs by as much as 50%, declares the report of Dr. E. L. R. Stokstad and Dr. T. H. Jukes of the Lederle Laboratories Division, American Cyanamid Company, Pearl River, N. Y.

Although aureomycin's hitherto unsuspected nutritional powers promise to be of importance primarily in extending the world's meat supply and decreasing its production costs, they may also prove directly beneficial to human health by aiding the growth of malnourished and undersized children. Clinical investigations of this possibility are now under way.

Up to now aureomycin, like penicillin, streptomycin, and the other antibiotic wonder drugs, has been regarded solely as a weapon for fighting disease. Aureomycin has been found particularly useful against such ailments as virus pneumonia, whooping cough, Rocky Mountain spotted fever, undulant fever, typhus, eye infections, amebic dysentery, streptococcus and staphylococcus infections, and parrot fever.

Aureomycin's growth-promoting value was discovered in the course of research on vitamin B-12, another powerful growth stimulator.

Chicks and turkey poults as well as pigs have registered unprecedented gains upon receiving minute quantities of the drug in the form of a finely ground powder mixed with their feed.

Aureomycin, in the experiments conducted so far, has been found to produce a growth response that "cannot be duplicated by any of the vitamins known at the present time, even when added in many times the normal requirement." No undesirable side effects have been observed.

Aureomycin was first isolated about four years ago by Dr. B. M. Duggar of the Lederle Laboratories and derives its name from its golden color—aurum being the Latin word for gold. It is the first antibiotic to be used to promote growth in farm animals, although laboratory tests of the nutritional value of some other antibiotics have been made.

Exactly how aureomycin works in speeding growth is something yet to be determined. Since other antibacterial agents with widely differing chemical structures can produce similar though less dramatic results, it seems unlikely that aureomycin functions as a vitamin. "It is more probable that it inhibits growth of certain detrimental microorganisms in the intestinal tract. These bacteria may rob the intestine of some unknown vitamin, or they may produce a toxic compound."

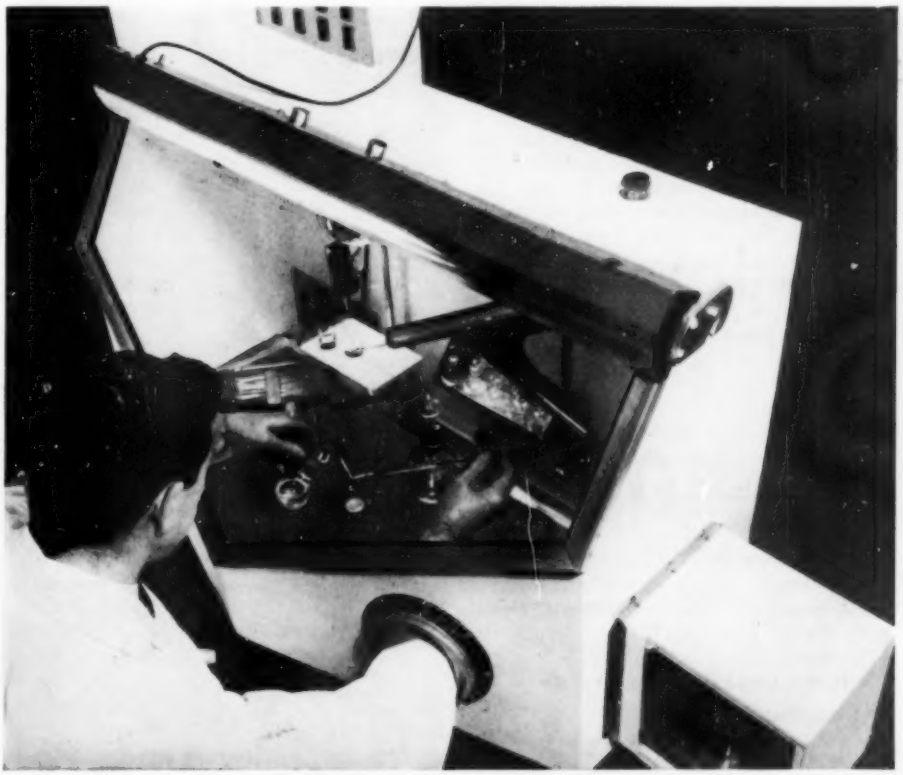
The value of animal protein products as supplements to vegetable protein rations has been known for some time. More recently it has been found that the activity of these animal protein supplements is due to a vitamin which has been designated the animal protein factor, often called APF, and which includes vitamin B-12.

Aureomycin, like penicillin and streptomycin, is obtained from a mold by fermentation. Fermentation products used in the preparation of antibiotics were found to contain vitamin B-12, and these materials were developed as commercial sources of the animal protein factor for the feed industry. A product prepared from the aureomycin fermentation gave a growth response with chicks which was greater than that which could be obtained with pure vitamin B-12. This precipitated a coast-to-coast series of experiments which yielded the recently reported results.

Experiments showed that while an animal protein factor supplement made from an aureomycin fermentation product produced a marked increase in growth, vitamin B-12 supplements produced no growth response in turkeys.

Similar results were observed with pigs at the University of Florida. Thus, results with chicks, turkeys, and pigs showed that the aureomycin fermentation contained another growth factor in addition to vitamin B-12. This second growth factor does not occur to any appreciable extent in natural feedstuffs, with the possible exception of fish meal. This second growth factor is the antibiotic aureomycin.

The amount of aureomycin needed to produce a response is small, it is emphasized. Twelve milligrams—or about four



TOM THUMB LABORATORY—The use of a miniature laboratory into which only the gloved hands of the technician protrude cuts cost of contamination control necessary in radioactive isotope research. A plywood box and surgical gloves for his hands are sufficient to absorb low energy radiations from many radio-isotopes. Because of the micro-techniques used in such research, practically an entire laboratory can be placed in one box.

ten-thousandths of an ounce—per pound give a marked response.

Since the fermentation product used need not be purified, the cost of adding aureomycin to feedstuffs is not great. This product sells for 30 to 40 cents a pound, and about five pounds of the product is enough to mix with a ton of feed. Pure aureomycin was employed in the tests which established the drug's role in nutrition.

Inclusion of aureomycin in a ration reduces the requirement for vitamin B-12 by 50%. This partially explains the fact that animal protein factor supplements from aureomycin fermentation products apparently contain more vitamin B-12 as measured by chick assay than as measured by microbiological assay.

"The use of feeding supplements containing aureomycin promises to give faster growth than has been obtained on many diets of natural ingredients. This increase in growth has been observed in chickens, turkeys, and pigs. The use of aureomycin as a feed supplement is not limited to vegetable protein rations. It produces an increase in growth when added to diets containing animal proteins as well as when added to all-vegetable protein diets. This promises to give more efficient utilization of feed and to decrease the cost of meat production."

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MEDICINE

Leg Cramps Preventive

➤ THE often agonizingly painful cramps that attack the legs at night can be prevented by one of the early anti-allergy drugs, benadryl. Success with this drug in 17 patients is reported by Dr. Meyer Naide of the University of Pennsylvania Hospital in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (April 15).

Why this drug, one of the first of the now famous anti-histaminics, prevents these cramps is not known. Dr. Naide tried it because it had been repo ted effective in relieving the muscle rigidity of parkinsonism, or shaking palsy as it is popularly called.

The first patient was a man who had suffered for 17 months from nocturnal leg cramps. Quinidine which usually helps this condition failed to give relief, as did a variety of other medicines. One capsule of benadryl at bedtime has given this patient complete relief since March 14, 1949, when the first one was taken.

Some of the other 16 patients found their cramps failed to return when they stopped taking the drug. Others, however, had to go on taking it.

The benadryl has the added advantage of being safe to give pregnant women who often suffer severe leg cramps and to whom physicians do not like to give quinine or quinidine.

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MEDICINE

Infecting Particles Have Been Seen

➤ SCIENTISTS are now convinced that they can see the thing that gives you a cold or 'flu or infantile paralysis or other virus-caused disease. Using electron microscopes they have been seeing particles which were believed to be viruses.

But heretofore there has been some doubt about whether these particles were the infectious virus or something associated with it. Evidence that the particles are the infectious virus was reported by Prof. Max A. Lauffer and Dr. Herman T. Epstein of the University of Pittsburgh at the meeting of the American Chemical Society.

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Photographs: Cover, U. S. Coast Guard; p. 243, Bakelite Division, Union Carbide and Carbon Corporation; p. 245, General Electric; p. 247, Hamilton Wright; p. 256, U. S. Rubber Company.

● RADIO

Saturday, April 29, 3:15-3:30 p. m. EST

"Adventures in Science" with Watson Davis, Director of Science Service, over Columbia Broadcasting System.

Dr. Samuel K. Allison, Director, Institute for Nuclear Studies, University of Chicago, and Dr. Victor F. Weisskopf, Professor of Physics, Massachusetts Institute of Technology, will discuss "Is Scientific Secrecy Necessary"?

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MEDICINE

More Chemical Conquests

Feature functions of some of the latest drugs are: a dual attack on stomach ulcers, safer and easier blood transfusions, superiority to streptomycin in combatting TB.

➤ FURTHER conquests of disease by chemical developments were forecast to the American Chemical Society meeting in Philadelphia.

One drug makes a double-barreled attack on peptic ulcers. This compound, reported by John W. Cusic and Dr. Richard A. Robinson of G. D. Searle & Co., Chicago, not only relaxes the smooth muscle of the stomach, thereby curbing spasms, but it also inhibits the nerve impulses releasing acid in the stomach. The compound, which is a complex metho-bromide, can be taken by mouth. Now being tested clinically, it is not yet available for general medical use.

A new medicinal cream which itself fights bacteria and fungi promises to be an effective carrier of other drugs as well. This new product is cyclohexyl pyroborate and was developed by Dr. M. M. Clark and Dr. A. R. Clark at the Foxlyn Laboratories, Mountain Lakes, N. J. It rubs into the skin without forming greasy film or jelly and melts when it picks up moisture from the skin. Not only is it antiseptic itself but it stops insect bites from itching, and it also deodorizes.

A new series of synthetic chemicals, which promise to rival the potency of streptomycin in combatting tuberculosis, has been developed at E. R. Squibb & Sons Research Laboratory, New Brunswick, N. J., by Dr. Jack Bernstein. The new drugs can be taken by mouth. So far they have not been tried on human beings, but they show promise in mice experiments.

German research during the war pointed to the possibility of these anti-tuberculosis chemicals which form a new class of compounds called thiosemicarbazone. Over a hundred different chemicals of this sort have been made and tested.

A new chemical promises safer and easier blood transfusions, because while it raises the blood's clotting power in the body it has the opposite effect in blood stored in blood banks. Reported by Dr. Gustav J. Martin, research director of National Drug Company, Philadelphia, the compound is ethylene bis-iminodiacetic acid.

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VIEW BY PROXY—By looking through a special, water-cooled periscope, the engineer can watch the pattern of burning gases in a jet engine on the other side of the wall. The hoses running into the periscope carry 45 gallons of water per minute to cool the optical system. On the right, by the observer's head, is a motion picture camera for recording in color action inside the engine as it would appear to a man if he could look directly up the engine's exhaust pipe.

PHYSICS-AERONAUTICS

Periscope Examines Gases In Jet Engine Exhaust

➤ THE inner parts of the flaming gases in the exhaust of a jet-engine, in which higher temperatures exist than unprotected metals can withstand, are being examined in Lynn, Mass., with a special, water-cooled periscope.

It is a quarter-ton steel cylinder, projecting through a heavy wall into a chamber behind a stationary jet engine and into the fiery exhaust which may have a temperature of 2,500 degrees Fahrenheit. It is jacketed in thick stainless steel, beneath which is a 45-gallon-per-minute water-cooling system. It is in use at General Electric's gas turbine division. It was developed at the company's Schenectady laboratories.

A quartz window in the cylinder, both air-cooled and water-cooled, permits the user to look up the business end of the engine. The air-cooling system blows a stream of cold air over the window, preventing the exhaust gases from reaching it.

Observations are made from the outer side of the protecting wall. Images of the burning gases are transmitted to the observer through the tube by mirrors. Records can also be made with a motion picture camera attached to the observing end of the periscope.

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GENERAL SCIENCE

First National Science Fair To Be Held

➤ THE first National Science Fair, its exhibits the work of enterprising high school students from all parts of the country, will be held in the famed Franklin Institute in Philadelphia May 19, 20 and 21.

The finalists from more than 12 regional science fairs in April and May will be sent to Philadelphia by sponsoring newspapers.

Three days of sightseeing, tours of research laboratories and interviews with leading scientists will be climaxed for the youngsters by presentation to the winners of more than $1,000 in scientific equipment.

First national competition of its kind, the fair is an activity of Science Clubs of America. Operating scientific devices, complex studies and collections of rare specimens in many fields—all the work of the youthful participants—will be on exhibition to the public.

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CHEMISTRY

Women in Chemistry

Dr. Mildred Rebstock, chemist who synthesized chloromycetin, advises women interested in science that they will get better breaks in chemistry than in other fields.

➤ ADVICE to young women wanting to follow a career in science: You will get a better break in chemistry than in any other field of science.

The advice comes from Dr. Mildred C. Rebstock, 30-year-old chemist of Parke, Davis and Co., Detroit, who received from President Truman one of the Women's National Press Club achievement awards. Dr. Rebstock received the award in recognition of her work in synthesizing chloromycetin, first of the "big four" antibiotic drugs to be synthesized on a practical large-scale production basis.

Dr. Rebstock's advice on scientific careers for women was given when she was interviewed by the club's president, Miss Jane Stafford, medical writer for Science Service. The interview was on Adventures in Science, radio program presented each Saturday by Watson Davis, Director of Science Service, over the Columbia Broadcasting System.

Almost half, 42%, of all women in science are employed in chemistry, Dr. Rebstock said. "But," she said, "you will find women working in every field of science, even though many of them are not on the professional level. In industry, pharmaceutical and food companies are most inclined to hire women. For instance, at Parke, Davis, the women research workers represent 40% of the technical staff. These girls all have BA or BS degrees and many of them have master's or doctor's degrees."

Opportunities in medicine seem to be particularly good, she observed. "While the percentage of women doctors is still low, more girls are gradually being admitted to medical schools. However, they are generally the very top-flight students.

"I would say that there is a wide range of careers possible for women in science generally," Dr. Rebstock declared. "Some of the jobs, such as nursing, have traditionally been a woman's job. In others, the opportunities have only recently arisen and women are still in the process of demonstrating that they can do the work well.

"But women are proving themselves, and this is demonstrated by the fact that laboratories are not going back to their prewar practice of barring women scientific workers from employment."

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METEOROLOGY

Ammonia Storm Control

➤ THE possibility of reversing the electrical charges in thunderstorms by spraying the clouds with ammonia and thus controlling them was discussed at a meeting of 17 outstanding meteorologists at the University of Chicago.

Laboratory experiments with lightning as reported by President E. J. Workman of the New Mexico School of Mines set off the discussion.

Dr. Workman reported that the electrical charges in a thunderstorm are built up from drops in the clouds made of an inner core of solid ice with a negative charge and an outer shell of water with a positive charge. He told the other meteorologists that his experiments showed that the nature of the tiny particles of foreign matter in the water determined whether the outer shell was positive and the inner core negative or vice versa. The gas ammonia, he said, reverses the field, at least in the laboratory. It has a chemical reaction with the tiny particles of matter already in the air.

"If we toss a few hundred pounds of ammonia into the air near a thunderstorm, it may inhibit the production of electricity," Dr. Workman speculated.

"Of course," he added, "we aren't sure what effect the ammonia would have, but we think that, at least, it would make a difference in a thunderstorm."

Experiments conducted on actual thunderstorms have not been too conclusive, Dr. Workman said. The difficulty is that there are so many kinds of thunderstorms and thus it is extremely hard to conduct a controlled experiment.

The five-day meeting, held under the auspices of the Air Force project on thunderstorm electricity, centered around a discussion of the status of research on lightning.

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MEDICINE

Mice with Older Mothers Have More Cancer Resistance

➤ THE older the mother, the hardier the offspring. That is the rule for cancer resistance on the part of mice, Dr. Leonell C. Strong of Yale University School of Medicine in New Haven, Conn., finds.

Mice of a female mouse's first litter survived an average of 52.4 days after developing cancer. Mice of the same mother's eighth litter born when she was older, survived an average of 130 days after developing cancer. Survival periods of litters between the first and eighth gradually increased from the 52.4 to the 130 days. The cancers were induced by injections of methylcholanthrene, potent cancer-producing chemical.

Details of Dr. Strong's experiments are reported in the journal, SCIENCE (April 14).

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MEDICINE

DDT Does Not Poison by Absorption through Skin

➤ THE notion that a human being can be poisoned by DDT by absorbing it through the skin has been blasted in experiments of two Navy doctors at Camp Lejeune, North Carolina Marine Corps base.

Exhaustive tests were made on insect control personnel who had been in direct contact with DDT solutions and dusts for periods from six months to five years.

"There were no signs or symptoms of illness attributable to DDT in any of the subjects," Lieut. Comdr. William J. Perry and Lieut. Leonard J. Bodenlas of the Naval Medical Field Research Laboratory report in MOSQUITO NEWS (March), journal of the American Mosquito Control Association.

Alarming statements last year that exposure to DDT might be a cause of virus X and other body disturbances were not substantiated by scientific evidence, they charge.

If DDT is taken by mouth, its presence can be determined in fats of the human or animal body, where it accumulates.

The Navy researchers examined body tissue from military personnel and laborers on three Marine Corps bases whose chief occupation was handling large quantities of DDT. They ran chemical tests of body fluids and excreta. In no case did they find a trace of DDT accumulation from exposure to the insecticide.

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MEDICINE

Chemical Guards Against Cancer Danger from Sun

➤ DISCOVERY of a chemical that has the possibility of protecting the skin against the cancer-inducing action of sunlight as well as against sunburn is announced in Chicago.

The chemical is PABA, short for para-aminobenzoic acid, one of the B vitamins which was used to treat scrub typhus during the early days of the war.

Applied in a cream base, PABA protects the skin very effectively against the redness induced by sunlight, says the American Cancer Society's report of work it supports at the University of Chicago under the direction of Dr. Stephen Rotham.

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HYDROGRAPHY

Iceberg Menace Grows

The iceberg danger in the north Atlantic may soon be the greatest since 1939. The Ice Patrol is at work charting the bergs and radioing "ice" information.

See Front Cover

➤ ICEBERG conditions in the North Atlantic may be worse in coming months than in any year since 1939.

For Holy Year pilgrims and other Europe-bound tourists, the dread marine warning "Ice" has already begun to mean a longer, round-about voyage to British or continental ports.

Passenger and cargo ships alike first swung south around the dangerous, iceberg-studded Grand Banks of Newfoundland on March 24, it was learned from the U. S. Navy's Hydrographic Office. Normally they do not adopt emergency "Track B", 150 miles south of the shortest great circle route to Europe, until April 10.

To the north, groping by radar through silent, solid fog more days than not, a U. S. Coast Guard cutter has been on station since late February. It mans the front lines in a cold war which 14 nations have fought for 38 years—the International Ice Patrol.

CHILE COPPER CACHE—A big blast loosens thousands of tons of ore at the head of the Chuquicamata mine in Chile. Huge shovels will then move in to load the ore cars. The "Valley of the Moon," the world's richest mineral reserve, comprises a $100,000,000-a-year industry and is the source of 70% of their U. S. dollar income.

With the exception of the war years 1917-18 and 1942-45, the Banks have been patrolled each spring, from March into July, since 1912.

On the night of April 14-15 that year the trans-Atlantic liner Titanic, trying for a speed record on her maiden voyage, smashed into an iceberg and went down with 1,731 passengers. The disaster startled the world. It brought two Navy cruisers that year to begin the ice patrol, and in London, an international conference on safety of life at sea.

Belgium, Canada, Denmark, France, Germany, England, Italy, Japan, Netherlands, Norway, Spain, Sweden, Russia and the U.S. signed an agreement to establish a permanent patrol of the iceberg area. The ships have always been U. S. Coast Guard cutters. The cost of maintaining them is shared by the participating countries in proportion to the tonnage of their shipping across the North Atlantic.

Now, from Ice Patrol Headquarters at Argentia, Newfoundland, both planes and ships go out. They are equipped with war-developed radar to spot the mountainous icebergs in the thickest fog, and long range navigation (Loran) receivers to give the exact location of the ice.

Special B-24's and B-17's are used in the air. On the ocean, the 254-foot cutters rotate on 15-day tours of duty. They can crack through field ice, shell or put demolition teams aboard icebergs, or answer with the most modern rescue equipment available any calls of distress.

They chart the drift of field ice, icebergs and "growlers," smaller pieces which break off the bergs. The Labrador current and the Gulf Stream meet over the eastern shelf of the Grand Banks at the so-called "cold wall." There the ice drifts erratically as much as 60 miles a day.

Twice daily the Ice Patrol commander broadcasts bulletins to Washington.

"Some idea of the importance which mariners near the Grand Banks place on ice information is indicated by the fact that practically all commercial radio transmission ceases during these periods," the Coast Guard notes in a detailed description of the Ice Patrol.

Each year the icebergs come down from the great glaciers on the western Greenland coast of Baffin Bay. They journey about 1,800 miles in the Labrador current before they become silent white specters to U. S. - Europe shipping.

A giant eddy of the two great currents sends them south in a probing finger across the normal shipping lanes. Sometimes they melt quickly, and the year is reported a light one by the Ice Patrol in its final summer report.

An iceberg nearing the disintegration point rests on a placid Arctic sea as shown on this week's cover of SCIENCE NEWS LETTER while the sun forms radiant incandescent patterns on the edges. A short while before, this "disintegrating destruction," while slicing through the seas, could have ripped a gaping hole in any ship. The Ice Patrol has done much to conquer the rambling fury of such ice packs.

Not since 1939, when icebergs remained a menace into August, has there been an above-average ice year, the Hydrographic Office said. (Although there was no regular ice patrol in the war years, the Navy and Coast Guard kept sharp tabs on ice when guarding huge convoys across the Atlantic.)

This year, however, "early indications are that there will be more icebergs in the danger area than in at least ten years," William G. Watt of the maritime security branch of the Hydrographic Office said. A great deal depends upon wind and weather, he said. These variable factors control the lifespan and the travel of the mountainous ice.

Navigators, listening closely to the broadcasts of the Ice Patrol, know this: Not since the patrol was inaugurated has a ship been lost in the policed lanes through collision with an iceberg.

Science News Letter, April 22, 1950

PHYSIOLOGY

First Nerve Impulse Clears Way for Others

➤ LIKE a motorcycle police escort, the first in a series of nerve impulses racing through the human body clears the way for those that follow and enables them to go faster.

This is indicated in the results of a study of fundamental mechanisms of the nervous system by Dr. Theodore H. Bullock and Lillian R. Berkowitz of the University of California at Los Angeles zoology department.

The study shows that in many cases when a nerve receives an impulse, subsequent impulses travel at a faster rate through the nerve fibers for a short time. This acceleration continues until fatigue slows down conduction.

An investigation was made of the rate at which impulses are conducted through the single nerve fibers of sea worms, earthworms and whole nerves of frogs. The rate of conduction was actually increased up to 20% in all these cases after a "conditioning" impulse.

Until these results were observed, it had been thought that an impulse slows down subsequent impulses until recovery to a normal rate is complete.

These observations may greatly simplify the search for the basic mechanism of nervous function.

Science News Letter, April 22, 1950

PLANT PATHOLOGY

Deliberate Infection May Double Strawberry Yield

➤ BY deliberately infecting a super-sensitive European strawberry with plant diseases, scientists are trying to give you twice as many strawberries for breakfast from the same number of plants.

They are crossing American varieties with an imported strawberry called *Fragaria vesca*. Growing wild in Europe, it was found to have a marked reaction to viruses which damage commercial and garden varieties in this country.

Researchers can thus use it as a guinea-pig plant, learning quickly whether a certain native strain is diseased, and if so, what sort of virus is attacking it.

Dr. George M. Darrow, who heads deciduous fruit work at the Department of Agriculture's research center, said U. S. strawberry diseases are probably the most serious of all fruit enemies. Incurable, they can ruin an entire strawberry bed quickly.

Research in 1950 will be aimed at finding a virus-free strawberry stock and boosting, perhaps even doubling, the yield per plant, Dr. Darrow said.

Science News Letter, April 22, 1950

FORESTRY

More Trees for Winter Protection of Pheasants

➤ THE RING-NECKED pheasant, prince among U. S. game-birds, is bringing more and more trees to one of the nation's most treeless states, South Dakota.

A top project under the Pittman-Robertson Federal aid to wild-life bill, passed by Congress, will be the planting of more shelterbelts in South Dakota to help the state's huge annual crop of pheasants through severe winter storms, the U. S. Fish and Wildlife Service said.

State conservationists hope eventually to plant four cover areas in each township. Properly spaced, they will mean pheasants and other wildlife will always be within a mile and a half of a wooded refuge. Asparagus and white clover will be planted as well as trees to give the birds something to eat when grain fields are buried in snow.

Science News Letter, April 22, 1950

MEDICINE

Anti-Fatigue Chemical Helpful in Arthritis

➤ NEW aid for arthritis patients may come from a substance hailed during the war as a possible anti-fatigue chemical.

This substance is pregnenolone. It is a synthetic chemical related to the anti-arthritis hormone, cortisone. Given to a group of 30 arthritis patients, pregnenolone brought "striking improvement" to 15, mild improvement to 11 and left four unimproved, six researchers report to the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (April 15).

The six are: Harry Freeman, Gregory Pincus, Carroll W. Johnson, Samuel Bachrach, George E. McCabe and Harold MacGilpin, of the Worcester Foundation for Experimental Biology, Shrewsbury, Mass., and the arthritis clinic of Memorial Hospital, Worcester, Mass.

Patients were not cured, relapsing two to 16 weeks after treatment was stopped.

The synthetic chemical is available in the form of pills to be swallowed and has no adverse side effects, the Worcester Foundation scientists report. They think it may prove useful as a substitute for scarce cortisone and ACTH, or as a secondary medicine to hold the improvement brought about by cortisone and ACTH.

Science News Letter, April 22, 1950

WILDLIFE

U. S. Waterfowl Population Drops Nearly 25 Percent

➤ A DROP of nearly 25% in North American waterfowl—ducks, geese, brant, coot and swans—was shown by the 1950 migratory bird census.

The annual inventory was taken Jan. 10 to 13 in the U. S., Canada, Mexico and the West Indies. Albert M. Day, director of the U. S. Fish and Wildlife Service, reported the findings.

The sharp decrease under the 1949 count means shorter hunting seasons next fall unless northbound flocks find favorable conditions on breeding grounds in Arctic tundras and marshes.

Losses in continent-wide populations of almost all species of waterfowl were evident, Mr. Day reported. He blamed a late breeding season in 1949 combined with droughts and excessive drainage of waterfowl havens in the prairie sections of this country and Canada.

The drop in waterfowl numbers contradicts winter-long reports of local sportsmen "who in many areas have seen more ducks and geese this year than in former years," Mr. Day said.

This was because millions of waterfowl stayed in this country during the unusually mild fall, instead of moving on to Mexico and other southern wintering grounds, he explained.

"In addition, birds were concentrated on reservoirs and other large bodies of water. Drought conditions . . . dried up marshes in some parts of the country," he added.

Mexican wildlife observers, cooperating in the inventory, found a drastic decline in the wintering populations of waterfowl in coastal marshes and bays and in highland water areas.

Comparative figures on various types of waterfowl were not released by the Wildlife Service. The report indicated, however, that even swans, which are not hunted, showed an appreciable decline.

Science News Letter, April 22, 1950

IN SCIENCE

PHYSICS

Filter Removes Radioactive Particles, Prevents Smog

➤ A FILTER paper, developed in Cambridge, Mass., will remove radioactive particles from gaseous wastes escaping from processes in which the particles are made or used. It can also be used to filter smoke stack gases to prevent smog.

This new paper-like filtering material was developed by Arthur D. Little, Inc., under contract with the Atomic Energy Commission. Establishments of the Commission use cooling or ventilating air which may become contaminated with radioactive particles. It is highly desirable that the contamination be eliminated before the used air is discharged into the atmosphere.

The material in the filters contains treated paper-making fibers in combination with very finely divided mineral asbestos fibers. It is formed in soft, flexible sheets which can be pleated and formed into shapes to fit filtering units of large capacity. It is a relatively inexpensive product, and can be made on paper making machines which are now employed to fabricate soft, saturating papers.

In addition to applications to remove radioactive particles from discharge gases and smog-causing fumes in factory-stack discharges, other uses are possible. Important is filtering incoming ventilating air for biological laboratories and hospital buildings, particularly for operating rooms.

Science News Letter, April 22, 1950

PHARMACY

New Headquarters for U. S. P. Near WHO

➤ U.S.P., short for U. S. Pharmacopoeia, dedicated its new home in New York. Pharmacopoeia headquarters formerly were in Philadelphia.

The Pharmacopoeia is a book which provides the standards for the most important medicines used in the United States and many Latin American countries.

Established in 1820, it is revised every five years by a national voluntary committee of medical and pharmaceutical experts. Its standards are enforced by the U. S. Food and Drug Administration and by many state and municipal health agencies.

One reason for the move from Philadelphia is said to be the proximity to World Health Organization headquarters in New York. WHO is now working on the first International Pharmacopoeia and the U.S.P. committee of revision chairman has been assisting with this task.

Science News Letter, April 22, 1950

NCE FIELDS

AGRICULTURE

Find Soil Lacks Sulfur, Essential Plant Element

➤ AN acute shortage of sulfur, essential element in plants that supports human life, has been disclosed.

Dr. Frank A. Gilbert, assistant supervisor of the agricultural division of the Battelle Memorial Institute, Columbus, Ohio, states that sulfur has proved to be "the most underrated plant nutrient."

New analytical techniques that are more accurate than those previously available have shown that plants need from two to 100 times as much sulfur as was formerly believed. Sulfur in plants is the ultimate source of all sulfur for animals, Dr. Gilbert states.

Sulfur-deficient soils are found particularly in rural areas, distant from industrial operations, where relatively little of the element is precipitated from the air. Sulfur is a constituent of protein and has long been known to be essential to plant growth. Sulfur also affects the formation of chlorophyll.

When plants are severely deficient in sulfur, their leaves may be light green in color. If fertilizer containing sulfur is then given to these pale plants, the leaf color soon changes to a dark, healthy green, Dr. Gilbert points out.

Science News Letter, April 22, 1950

AGRICULTURE

An Ounce of Prevention For Weedless Fields

➤ THE day is coming when farmers will mix weed-killing chemicals with fertilizers, and crops will grow in weedless fields.

A two-year study of so-called pre-emergence dressing at the Jeallott's Hill Research Station of Imperial Chemical Industries, Ltd., in England, "points to new possibilities of weed control in crops," Drs. W. G. Templeman and J. O. Wright report in the British journal, NATURE (April 8).

The Department of Agriculture said that this idea of killing weeds before they get started is also under scrutiny in many U. S. agricultural experiment stations.

The British scientists mixed three different weed killers in test plots as much as eight weeks before sowing kale, mangolds, lettuce, onions, field beans, peas, lucerne, sugar beets and swedes.

The chemicals were iso-propylphenylcarbamate, methoxone and the famed, war-developed 2,4-D. Tested alone, each showed they could kill certain types of weeds and grasses.

Used in combination, say the researchers, they "gave excellent weed control, each acting upon the weed species susceptible to it."

The chemicals were more effective when applied before weeds had even pushed through the ground. They must be used varying numbers of weeks before the crops are sown, the report warns. Otherwise the crops themselves may be harmed.

The U. S. Department of Agriculture established a weed control division within the last six months. Dr. Karl S. Quisenberry, U.S.D.A. agronomist, said, "Someday pre-emergence treatment may be widely used. Right now, too little is known about it."

Science News Letter, April 22, 1950

TEXTILE ENGINEERING

Fabric Mildew and Rot Resistance Developed

➤ TREATMENT for all types of fabrics to make them highly resistant to mildew and rot has been developed in Fair Lawn, N. J.

A chemical, copper-8-quinolinolate, does the trick. It is poisonous to lower organisms, but not for higher animals, Dr. Samuel Lee of the Interchemical Corporation states.

The chemical is bonded to the textile fiber with a resin. It promises to gain back for many fabrics fields that have been lost to the plastics, such as shower curtains, tropical fabrics, oil cloth and cotton shades.

Dr. Lee states that the chemical extends the horizons of textiles to fields in which it has never been much of a factor, such as fungus-proof sheets.

The treatment is applicable to both vegetable fibers, such as cotton, and animal fibers, such as wool.

Application of this chemical allows, at a reasonable cost, almost any degree of permanence of mildewproofing. Rot and mildew result largely from the growth of fungi and the bacteria on the surface of textile fibers. The compound destroys the organisms that promote rot and mildew.

Protection of the chemically-treated fabric is gradually lost upon repeated launderings.

Science News Letter, April 22, 1950

CHEMISTRY-PHYSICS

Electron Beams Do Not Decrease Vitamin Content

➤ ELECTRON beams being used to preserve food by sterilizing it do not decrease the vitamin content appreciably, Dr. Wolfgang Huber, of the Electronized Chemicals Corp. New York told the American Chemical Society. Short and tremendously powerful bursts of electron or cathode rays kill bacteria and spores, he claimed, but do not harm the taste, color and appearance of the food. Pure vitamins in solution are chemically disrupted by the radiation effect, but loss of vitamins in the food is insignificant, he reported.

Science News Letter, April 22, 1950

CHEMISTRY

Prized Bouquet of Wine Due to Over 50 Flavors

➤ IN a fine wine more than 50 identified flavors, born of the growing grapes, the fermented substances and the yeasts themselves, give the prized bouquet.

Dr. A. J. Haagen-Smit, Dutch-born chemist of the California Institute of Technology, told the American Chemical Society in Philadelphia about the flavorable complexity of wine as an example of the possibilities of analyzing chemically the extremely small amounts of substances in the food we eat.

Of the world's great resource of living plants, with about a quarter million different kinds listed by the botanists, only a few thousand have been studied in the laboratory for their volatile products, he told the chemists.

Industry and science would benefit from a wide-spread study of just what unusual materials can be obtained from many unexplored plants. Dr. Haagen-Smit made this prediction upon the basis of 20 years of research on flavorings, perfumes and other essential oils recognized by the $1,000 Fritzsche prize awarded him.

Science News Letter, April 22, 1950

AGRICULTURE

Off-Flavored Milk Can Be Prevented

➤ MILK that tastes the same all year round is possible by feeding cows the right kind of roughage.

The promise that the metallic or fishy taste of some milk may be prevented was made by Prof. Vladimir N. Krukovsky of Cornell University in Philadelphia, Pa.

He explained to members of the American Chemical Society that these off-tastes are associated with the deterioration of the thin membrane that surrounds each tiny globule of fat.

This membrane can be preserved to some extent by vitamin E, which is found in varying amounts in the oil of many plants. Thus the type and quality of roughages fed to the cow can account for peculiar flavors that sometimes cause children to refuse milk.

Prof. George A. Richardson of Oregon State College told the same meeting the food and usage values of natural milks may be calculated from the fat percentages. This method is accurate enough to be used as a basis of payment to the producer and by the consumer.

Carotene is a very good substance for coloring butter, Prof. Richardson said. It is a means not only of maintaining a favorable eye appeal but also a more uniform vitamin A potency throughout the year.

Science News Letter, April 22, 1950

ASTRONOMY

Mars, Saturn Still Visible

These two planets are visible in the south and Mercury can be seen for the first few days in the west. Hydra, the water snake constellation, is also evident.

By JAMES STOKLEY

➤ THOUGH it is drawing away from us and getting fainter, the planet Mars is still brighter than any other planet or star to be seen in the evening sky. Its position is shown on the accompanying maps, which depict the sky as it appears about 10:00 p.m. at the first of May or about nine o'clock at the middle of the month. (Add one hour if you are on daylight time.) The magnitude of Mars at the beginning of May is minus 0.4, though by the end it will have faded to plus 0.2, about one and three-quarter times as faint.

Mars is in the large constellation of Virgo, the virgin. Just to the west in the neighboring group of Leo, the Lion, we see another planet, Saturn. Its magnitude is plus one, less than half the brightness of Mars. Also in Leo, is the first magnitude star Regulus, which stands at the end of the handle of a sub-group known as the sickle, the blade of which curves downward and to the west. Virgo likewise contains a star of the first magnitude, one even brighter than Regulus. This is Spica which is considerably eastward of Mars.

Great Bear Conspicuous

Though it contains no stars as bright, one of the most conspicuous constellations now visible is Ursa Major, the Great Bear, standing high in the north. Part of this group is the familiar great dipper, of which the well-known "pointers," in the bowl away from the handle show the direction to Polaris, the pole star. Probably it is not as well known, however, that the dipper's handle is also a useful guide to other groups.

If the curve of the handle is followed and continued, it brings us to brilliant Arcturus, in Bootes, the bear-driver and farther to Spica.

Low in the northwest are two remaining wintertime constellations, Gemini, the twins, and Auriga, the charioteer. In the former is seen Pollux and in the latter Capella, both of magnitude one. Similarly in the northeast there are two constellations just coming into view that also contain first magnitude stars. The lower, only part of which is shown on the map, is Cygnus, the swan, with Deneb, which looks fainter than it deserves because it is so near the horizon. Above it is Lyra, the lyre, with Vega.

Next to Gemini to the left (shown on the chart of the southern skies in the west) is Canis Minor, with Procyon, also of first magnitude. Completing the list of stars of this brightness that are depicted, there is Antares in Scorpius, the scorpion, near the southeastern horizon. This just barely gets into view. Thus it is indicated with a symbol that is used for third magnitude stars. When so low in the sky, its light has to pass through a greater thickness of the earth's atmosphere than when it is high overhead. This causes a considerable diminution in its brilliance. Later on May nights, and on summer evenings, it will be considerably higher in the south and conspicuous for its red color.

Mercury in West

As for the other naked-eye planets, in addition to those mentioned above it may be possible to glimpse Mercury in the first few days of the month low in the west right after sundown. It was at its best position, setting longest after the sun, on April 22 but, on May 1, it still remains in the sky about an hour and a half after the sun. Venus is a morning star in the constellation of Pisces, the fishes, rising about an hour and three-quarters before the sun on the first of the month. Jupiter in Aquarius, the water carrier, is to the west of Venus and rises, on the first, about an hour earlier. Jupiter is very bright, of magnitude minus 1.9, but Venus, with minus 3.7, is five and a quarter times as brilliant. For early morning risers they make a beautiful pair in the southeastern sky.

On evenings of late spring we have the best opportunity of seeing a constellation which, though the longest in the sky, is not a very familiar one. It is Hydra, the water snake, whose head is in the west near Procyon, while the tip of the tail is in the south below Spica. The group extends for 102 degrees from east to west, more than a quarter of the whole way around the heavens. No other has stars so widely separated. Brightest star in Hydra is Alphard, near the western end, which marks the serpent's head.

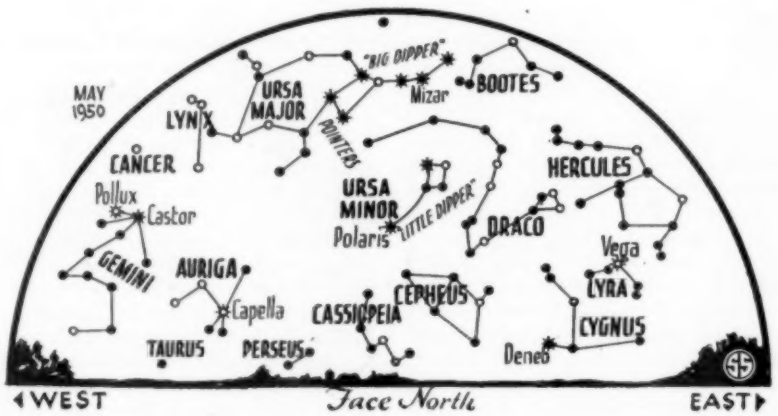
Two small constellations, associated in mythology with Hydra, are seen just above the eastern half. One is Corvus, the crow, a quadrilateral of stars just to the right of Spica. Farther to the right are two stars of Crater, the cup.

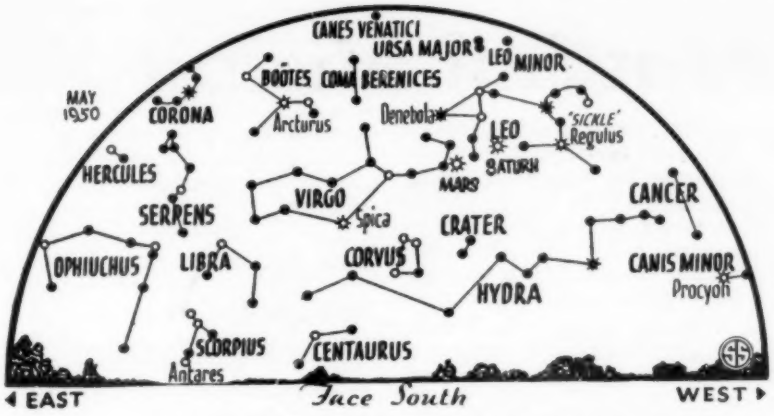
Three Stars of Centaurus

Below the end of Hydra's tail are shown three stars of Centaurus, the centaur, about all that appears in most of the United States though it is really a prominent and conspicuous constellation. One has to travel to more southerly countries to see it fully. From the latitude of southern Florida may be seen the brightest star in this group, Alpha Centauri, almost directly south of Spica. Alpha is sometimes referred to as Rigil Kentaurus (that is, the foot of the centaur since it marks the right front hoof of this manhorse). It is the nearest naked eye star in the night sky, as well as the third brightest. Its distance is 4.3 light years, i.e., 4.3 times the distance that its light travelling 186,000 miles every second will go in a year.

Actually the nearest star (except for the sun) is another which is near Rigil Kent., but is of the tenth magnitude, about a hundredth as bright as the faintest visible to the unaided eye. Named Proxima Centauri, it is only a small fraction of a light year this side of the naked eye star, which really consists of two separate bodies revolving around each other.

Just west of Alpha Centauri, forming in fact the hind legs of the centaur, is the famous Southern Cross. This too can be





☼ ✱ ○ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

seen just above southern horizon if the sky is clear enough, from southern Florida, but is better from more southerly points. From Rio de Janeiro, for example, at this time of year it can be seen in the southern evening sky about halfway from the horizon to the zenith. One would have to go beyond the southern tip of South America to see it directly overhead.

Coma Berenices Legend

Two other of the minor constellations are shown on our maps high in the south, with one actually directly overhead. These are Coma Berenices and Canes Venatici.

The first name means "hair of Berenice." According to legend she was the queen of Ptolemy Eurgetes, or Ptolemy III, king of Egypt from 246 to 221 B. C. It is said that when he went on a dangerous military expedition against the Assyrians, she vowed that she would sacrifice her beautiful hair to the Goddess of Beauty if he returned safely. He did, and she did, but the court was shocked soon afterwards when it was found that the tresses had vanished from the altar in the temple of Venus where they had been placed.

However, Conon of Samos, who was the royal astronomer, came to the rescue when he pointed out a group of faint stars in the sky and said that Jupiter had been so pleased that he had placed her locks in the sky. Before that these stars had been considered the hairy brush on the end of the tail of Leo, the lion, but since that time men have called them the hair of Berenice.

The Hunting Dogs

Canes Venatici, the hunting dogs, are contained within the curve of the handle of the Great Dipper. This constellation is a relatively modern one, invented by the Polish astronomer, Johannes Hevelius. In his book of star maps, published in 1690, he introduced several constellations mostly made of fainter stars to fill up spaces in the sky which the ancients had left blank. Leo Minor, the lesser lion, which is just above the big one, and Lyncis, the lynx which is shown in the western sky below the great bear, are other groups that he added.

TIME TABLE FOR MAY

May	EST	
1	10:19 p. m.	Full moon
	12:00 midnight	Moon nearest, distance 221,800 miles
4	early a. m.	Meteors visible radiating from constellation of Aquarius
8	3:32 p.m.	Moon in last quarter
9	8:42 p. m.	Moon passes Jupiter
12	6:55 p. m.	Moon passes Venus
14	11:00 a. m.	Mercury between sun and earth
15	3:00 p. m.	Moon farthest, distance 252,600 miles
16	5:54 p. m.	New moon
24	2:28 p. m.	Moon in first quarter
25	7:32 a. m.	Moon passes Saturn
26	4:50 a. m.	Moon passes Mars
30	9:00 a. m.	Moon nearest, distance 222,600 miles
31	5:43 a. m.	Full moon

Subtract one hour for CST, two hours for MST, and three for PST.

Science News Letter, April 22, 1950

CHEMISTRY

Fumes of Modern Air Crumble Athens' Acropolis

➤ THE Acropolis of Athens is slowly crumbling away because the acid-producing sulfur dioxide polluting today's air is disintegrating its marble, Dr. A. J. Sofianopoulos of the University of Dayton told the American Chemical Society. The remedy is periodic washing with pure water. Previous centuries of pure air left Athens' marble monuments relatively untouched.

Science News Letter, April 22, 1950

INVENTION

Wheel-Mounted Dustpan Operates with One Hand

➤ ONE hand is all that is needed to operate a wheel-mounted dustpan with a rotating brush for which a government patent was issued during the past month. No stooping is required with it. By means of a single handle, it is operated in an upright position.

The feature is a rotating brush at the forward edge of the dust pan. It gathers in the sweepings without the use of an ordinary broom. Each of the small wheels on which the pan is mounted carries a belt that passes over pulleys on the ends of the brush axle. When the device is pushed forward, the belts cause the brush to rotate to drive pick-up material back into the pan.

The device is not a carpet sweeper as the term is generally used. However, it can be employed to gather scattered debris on a carpet. The rotating brush can be swung upward to make emptying the pan easy. The inventor is Victor Filonowicz, Detroit, and the patent is 2,502,936.

Science News Letter, April 22, 1950

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WYOMING

Ride, fish, geologize or just relax. How?

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The region abounds in geological and historical interest—dinosaur bones, marine fossils and Indian implements are found nearby.

Write for folder—Paton Ranch, Shell, Wyoming.

BIOCHEMISTRY

Origin of Food Allergies?

➤ A POSSIBLE clue to the origin of food allergies and other irregularities in the body's use of protein, sugar and fat was suggested by Dr. Anthony A. Albanese of the Nutritional Research Laboratory of St. Luke's Hospital, New York, to the American Chemical Society in Philadelphia.

Cortisone, the scarce but powerful drug used to treat rheumatoid arthritis in combination with sex hormones and other complex chemicals of the type known as steroids, has increased beneficial effects on the patients when their nutritional condition is improved.

This combination suggests that, by improving the patient's physical condition by better feeding, better results may be expected from the limited amount of cortisone available for his treatment.

Steroid chemicals have a profound effect in the body's transformation of food into tissues needed for growth and repair, according to other papers presented to the chemists. The male hormone, for example, causes increase in the amount of protein stored in the body. These chemicals especially affect protein, fat and sugar metabolism, Dr. Albanese said. He pointed out that individuals vary widely in the way they are able to make use of the substances.

The relief that patients get from cortisone and other anti-arthritis drugs also varies widely from patient to patient. These effects may be parts of the same problem, Dr. Albanese said, and the solution may lie in the whole field of the relationship between steroids, hormones and foods. By evaluating the patient's condition through tests of vitamin levels and nitrogen analyses, he hopes to be able to obtain the maximum benefit of steroidal treatment of arthritis and the minimum of untoward effects.

Science News Letter, April 22, 1950

ENGINEERING

Photo-Electric Eye Heart

➤ A TINY disk of the metal germanium is the heart of a new photo-electric eye announced by the Bell Telephone Laboratories, New York, N. Y.

This entirely new type of electric eye is about the size of a small caliber rifle cartridge but it delivers very high power for a photo-electric cell.

The new device will be known as the "Phototransistor" because of its relation to the amplifying transistor which also uses a tiny chip of germanium. In this parent device, two hair-thin wires are pressed against the germanium, a semi-conductor material. The ends of the wire are hardly two-thousandths of an inch apart. The flow of very small electrical currents in one of the wires controls the flow of currents in the other in such a way as to give signal amplification. The transistor is a device to replace vacuum tubes in certain usages.

The phototransistor is similar in operation to the amplifying transistor, but is controlled by light rather than electric current. It uses only a single collector wire. The tip of this wire rests in a small dimple ground in the germanium metal. At this point the germanium is only three-thousandths of an inch thick.

Light focused on the opposite side of the disk can control the flow of electricity in the wire, thus making a control device similar in function to a photo-electric cell. It is a rugged device, without vacuum, glass envelope, grid, plate or hot cathode.

Photo-electric cells have been in use for the past quarter-century and have wide applications.

Science News Letter, April 22, 1950

Words in Science—
ANTHROPOLOGY-ARCHAEOLOGY

➤ ANTHROPOLOGY, in its broadest sense, is the science of man. Why are we built as we are, act in a group as we do, live where we do? Anthropologists search for the answers. They are scientific historians, studying man as an animal in relation to his physical character, his geographical distribution, the origin of various races, social relationships and customs.

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Science News Letter, April 22, 1950

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WILDLIFE

Last La. Crane Abducted

➤ IT took two helicopters plus abduction over the state line in a burlap bag. But Mac, the last whooping crane in Louisiana, was headed for a wedding, whether he liked it or not.

With free frogs legs being served in the wildlife warden's kitchen, he soon began to like it, the U. S. Fish and Wildlife Service says.

If you think the government gave you a hard time about the middle of March, however, consider what happened to Mac.

On March 11, using two helicopters, Fish and Wildlife Service men and two representatives from the National Audubon Society chased Mac out of his swampy home near Vermilion, La., and forced him over a lake.

It was a little like a dogfight. The whooping crane is the country's tallest bird, standing more than six feet tall on tiptoe with whooper outstretched. It has a seven-foot wingspan.

But by using the downdraft blast from the helicopters' rotors the wildlife men forced Mac into a deadstick landing on the water, came down beside him and bundled him into a bag.

He was flown to a nearby airport and whisked over the state line in a car to the Aransas National Wildlife Refuge near Corpus Christi, Texas. At Aransas, the only other whooping cranes left in the world—all 36 of them—spend the winter every year.

The Wildlife Service's expressed goal was a marriage for Mac. They say every member of the dwindling family "should be in production" if the whooping crane is not to become extinct.

But to allow him time to get used to the idea, the refuge manager did not push him up the aisle—not quite. Instead, Mac got frog legs just by coming to the kitchen door, according to the progress report on the bird sent to Wildlife headquarters in Washington.

Mac is the last of 12 whoopers who wintered in Louisiana for the past 15 years. One by one the others died.

The Wildlife Service's kidnaping was just in time for the annual departure of the cranes for their unknown breeding ground in the Arctic. Mac, the Service hopes, will come back with a family.

Science News Letter, April 22, 1950

CHEMISTRY

Man to Outstrip Nature

➤ CHEMISTS will outdo nature in production of wonder drugs a decade hence. They will manufacture artificially better disease treatments than mold-produced penicillin and other antibiotics.

This prediction of a come-back for man-made drugs was given by Dr. Theodor Wagner-Jauregg, German chemist now with the medical division of the U. S. Army Chemical Center at Edgewood, Md., at a meeting at the U. S. National Institutes of Health in Bethesda, Md.

Dr. Wagner-Jauregg is the son of Dr. Julius Wagner-Jauregg who in 1927 was awarded the Nobel Prize in medicine for his discovery that the fever of malaria could be used to cure syphilis of the brain and central nervous system (paresis).

"Nitramine," a chemical made in Germany during the war, Dr. Theodor Wagner-Jauregg said, is chemically related to chloromycetin, one of the Big Four mold remedies or antibiotics.

This suggests that other chemical relatives of chloromycetin should be synthesized in the search for better chemical remedies.

"Perhaps," he said, "the situation in this field is about the same as it was with quinine some decades ago. No other remedies for malaria were known in earlier times. Today we have several synthetic compounds not only equivalent to the natural drug but even better in some respects.

"Let us hope that, too, for the more complicated antibiotics, like penicillin or streptomycin, chemists will find synthetic substitutes, at least for some of their functions.

"Perhaps after 10 years, when nature has been exploited for a while of its antibiotics, classical therapeutic (curative) chemistry will have the opportunity to show that it is not quite dead, but that it has learned a lot of things from the elucidation of the structure of the natural miraculous drugs."

Science News Letter, April 22, 1950

FORESTRY

Squirrel, Frost Damage Mistaken for Oak Wilt

➤ EARLY spring cold snaps or hungry squirrels may trick you into thinking the deadly wilt disease has struck oak trees on your lawn or farm, the American Forestry Association warns.

Often only a qualified pathologist can tell whether a tree is really doomed. Young foliage may show symptoms similar to those caused by oak wilt, when the real trouble is frost damage, gnawing of branches by squirrels or mice, insect injury or other fungus blights which are not fatal.

The Association's journal, AMERICAN FORESTS (April), carries a request to all its members to report all suspected cases of oak wilt to the nearest state agricultural experiment station.

Caused by a deadly fungus, *Chalara quercina,* oak wilt was first identified in 1944. It has now spread mysteriously into six Midwestern states: Illinois, Wisconsin, Minnesota, Iowa, Missouri and Indiana.

Scientists do not think it is air-borne, as was the fast-moving blight which all but wiped out American chestnut trees. They can show oak wilt is spread when roots of adjoining trees grow together underground. But they do not know how it jumps to a new locality.

Whatever its manner of travel, oak wilt can kill a tree within weeks. It is causing pathologists grave concern, reports the Forestry Association.

Science News Letter, April 22, 1950

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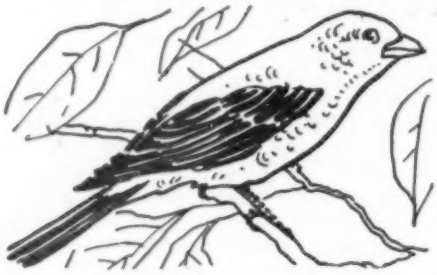

Scarlet Tanager

➤ FOR the benefit of any embattled man who finds himself losing ground in the face of wifely objections that his casual attitude towards clothes is in marked contrast to the dandified fastidiousness he displayed during courtship, the example of the scarlet tanager is cited for what it may be worth.

During the mating season, no creature in North America decks itself out in more resplendent finery than the male scarlet tanager. The color scheme is simple but dazzling. The whole body is a vivid red boldly set off by black wings and tail.

With this splendid haberdashery he does not long remain single. On arrival from the South American wintering grounds, around the beginning of April in the South and the beginning of May in the North and Canada, he joins forces with a female of the species and they set up housekeeping.

By August or September, after the couple have accomplished their mission and the fledglings are able to fend for themselves, the male's courting raiment undergoes a familiar post-marital change for the worse. The birds moult, and for the male the transformation is as startling as though a Royal Canadian Mountie were suddenly to exchange his dress uniform for olive drab fatigues.

Actually the bird has no cause for complaint, because when he emerges from moult he is still a comely bird. The new coat is a light yellowish green, similar to, but yellower than, the year 'round feathering of the female. The black wings take on a greenish edging. These are his traveling clothes, and it is in this sober garb that he spends the greater part of the year.

Scarlet tanagers are rather inept homebuiders. Their nest woven of rootlets and weed stems, is placed on a horizontal limb without too much thought to the whimsies of the wind. Not infrequently a gusty windstorm will pitch it to the ground. When this happens, the female, who seems fatalistic about it, sets right to work building a new one. Sometimes it takes four tries before the chirp of little ones crowns the couple's clumsy efforts.

While the yellowish olive-green female sits inconspicuously on the eggs waiting for her posterity to hatch out, her sportily colored mate is making a crimson flash among the tree tops as he flits busily about, singing in the sunlight. It is the song, not the plumage, that gives him away. For despite the brilliant color, the scarlet tanager is not often observed. He usually manages to keep dense foliage between ground observer and his perch high in the tree.

It is his song which betrays his presence to those who have learned to recognize it. The scarlet tanager's song has been likened to that of a robin with a cold.

Science News Letter, April 22, 1950

MINING

More Critical Minerals

➤ LEGISLATION which its sponsors hope will stimulate the production of low grade deposits of critical minerals will shortly be introduced in the House of Representatives.

The legislation, to be introduced by several members, will amend the Reconstruction Finance Corporation act to make the terms of loans easier in the production and shipping of taconite iron ore, manganese, chromite, copper, lead, zinc, bauxite, aluminum, synthetic liquid fuel and fertilizer.

Many of the minerals affected by the proposed legislation would be needed in great quantities in case of a new war. At present it is not profitable to mine low-grade deposits of some of them.

By far the largest development expected if the amendment becomes law is in the extensive deposits of taconite, a low-grade, extremely tough iron ore. The high-grade, relatively easy-to-mine ore of the Mesabi range in Minnesota is beginning to run out. It is this range which has kept our industrial pot boiling for years, which provided the basic material for the vast munitions output of the last war.

Plans for taconite production which would eventually reach a rate of 30,000,000 tons a year are on paper, but are not possible, the taconite proponents say, without some kind of government help. It is hoped that this amendment will provide an opportunity for the kind of long range financing which is believed necessary.

Taconite is extremely difficult to get out of the ground because it is extremely hard. Processing is almost as difficult. Persons interested in the process, however, believe they can construct a going processing plant with a capacity of 2,500,000 tons within six years after liberal financing is available. Other plants would follow much quicker.

The first bill will be introduced by Rep. John A. Blatnik, D., Minn., in whose district live many of the workers at the Mesabi range. He is interested because Mesabi range employment is steadily falling and it is seasonal work. Taconite, he says, would provide a new, steadier source of employment.

Science News Letter, April 22, 1950

• Books of the Week •

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ADVANCED CHEMICAL CALCULATIONS—Sylvanus J. Smith—*Macmillan*, 454 p., illus., $2.75. An advanced text in numerical chemistry. Answers are included.

THE AMERICAN MIND: An Interpretation of American Thought and Character Since the 1880's—Henry Steele Commager—*Yale University Press*, 476 p., $5.00. The author examines the work of great and small among our philosophers, clergymen, novelists, poets, and men of letters. He also considers the pioneer sociologists and economists.

CHEMICAL DEVELOPMENTS IN THYROIDOLOGY—William T. Salter—*Thomas*, 87 p., illus., $2.00. A monograph describing recent advances in this field.

A DICTIONARY OF ELECTRONIC TERMS—Harry L. Van Velzer, Ed.—*Allied Radio Corporation*, 63 p., illus., paper, 25 cents. Concise definitions of words used in radio, television and electronics.

EXPERIMENTAL DESIGNS—William G. Cochran and Gertrude M. Cox—*Wiley*, 454 p., illus., $5.75. A study of experimental designs which have proved their value in actual research work.

FUNDAMENTALS OF ORGANIC CHEMISTRY: A Brief Course for Students Concerned with Biology, Medicine, Agriculture, and Industry—James Bryant Conant and Albert Harold Blatt—*Macmillan*, 413 p., illus., $4.00. A rather full treatment of biochemistry is given.

FURTHER DIFFERENTIATION OF GENETIC FACTORS IN WHEAT FOR RESISTANCE TO THE HESSIAN FLY—C. A. Suneson and W. B. Noble—*Gov't. Printing Office*, U. S. Dept. of Ag., Tech. Bull. No. 1004, 8 p., illus., paper, five cents.

GEOLOGY AND MINERAL DEPOSITS OF AN AREA NORTH OF SAN FRANCISCO BAY, CALIFORNIA with BOX OF MAPS, PLATES 1 THROUGH 20—Charles E. Weaver—*Department of Natural Resources, California*, 135 p., Bull. 149, illus., $4.00. The geography, systematic geology, structure, and economic deposits of an area of approximately 2,215 square miles are discussed in this report.

A GUIDE TO GENERAL MEDICAL PRACTICE—Martin G. Vorhaus—*Macmillan*, 244 p., $3.50. An aid to the advanced medical student and new physician in facing the many problems which crop up at the inception of medical practice.

HIGHWAY RESEARCH BOARD INDEX TO PUBLICATIONS 1921-1949—Dorothy H. Bright, Com-

piler—*National Research Council*, 147 p., paper, $2.70.

INTRODUCTION TO SEMIMICRO QUALITATIVE CHEMICAL ANALYSIS—Louis J. Curtman—*Macmillan*, rev. ed., 391 p., illus., $3.50. The changes and additions have been almost exclusively limited to the laboratory section. The book is for a practical course dealing in materials smaller than in macro-analysis.

MARKET DISEASES OF FRUITS AND VEGETABLES: PEACHES, PLUMS, CHERRIES AND OTHER STONE FRUITS—Dean H. Rose and others—*Gov't. Printing Office*, U. S. Dept. of Ag. Misc. Publ. No. 228, 27 p., illus., paper, 75 cents.

MONEY MANAGEMENT: Your Shopping Dollar—Consumer Education Department, Ed.—*Household Finance Corporation*, 32 p., illus., paper, five cents. A few suggestions on how to make the dollar stretch farther. For beginners and experienced shoppers.

PATTERNS OF COOPERATION—Anne Winslow, Ed. —*Gov't. Printing Office*, Dept. of State publ. No. 3735, 130 p., illus., paper, 50 cents. Achievements of international organizations in the economic and social field.

PETROLEUM ENGINEERING: QUARTERLY OF THE COLORADO SCHOOL MINES, Vol. 45, No. 3B—Harry M. Crain, Ed.—*Colorado School of Mines*, 51 p., illus., 50 cents. Papers delivered at the Conference on Petroleum Engineering Sept. 30, and Oct. 1, 1949, as a part of the program for the observance of the 75th anniversary of the Colorado School of Mines.

PONDEROSA PINE BIBLIOGRAPHY—Arthur L. Roe and Kenneth N. Boe—*U. S. Dept. of Agriculture*, Misc. Publ. No. 287, 74 p., paper, free upon request to publisher, Northern Rocky Mountain Forest & Range Experiment Station, Missoula, Mont. A compilation primarily from the standpoint of forest management with references limited to material published prior to October, 1949.

PSYCHOANALYSIS: EVOLUTION AND DEVELOPMENT —Clara Thompson—*Hermitage House*, 252 p., $3.00. A review of theory and therapy. Written with the collaboration of Patrick Mullahy.

QUEST IN THE DESERT—Roy Chapman Andrews —*Viking*, 192 p., illus., $2.50. The story of an expedition to central Asia which hoped to reconstruct the past history of a great plateau. The author has his hero take along a geologist, a paleontologist, an archaeologist and a topographer. Fiction, of course.

REPORT ON THE PROGRESS AND CONDITION OF THE UNITED STATES NATIONAL MUSEUM FOR THE YEAR ENDED JUNE 30, 1949—United States National Museum—*Smithsonian Institution*, 123 p., paper, free upon request to publisher, Washington 25, D. C. Includes detailed reports in the fields of anthropology, zoology, botany, geology, engineering and history. There is also a list of accessions and a list of Museum publications.

SELECTED READINGS IN SOCIAL PSYCHOLOGY—Steuart Henderson Britt, Ed.—*Rinehart*, 507 p., illus., $2.00. A compilation of leading social scientists' writings with emphasis on experimental and observational reports to be used as a supplement to the standard social psychology text.

SETTING UP YOUR AUDIO-VISUAL EDUCATION PROGRAM: A Handbook for Principals—Audio-Visual Education Association of California—*Stanford University Press*, 34 p., illus., paper, $1.00. Many problems of preparing this program are discussed. Written in question and answer form and well illustrated.

SHIELDING FOR DIATHERMY—Warren C. Stoker and William W. Seifert—*Rensselaer Polytechnic Institute*, 61 p., illus., paper, free upon request to publisher, Troy, N. Y. A report on the problem of preventing interfering radiation from radio frequency power equipment used for non-communication purposes.

SMITH'S INTRODUCTORY COLLEGE CHEMISTRY—William F. Ehret—*Appleton-Century-Crofts*, 3rd ed., 511 p., illus., $4.25. A beginning college text.

STUDIES OF THE BLACK SWAMP SNAKE, SEMINATRIX PYGAEA (COPE), WITH DESCRIPTIONS OF TWO NEW SUBSPECIES—Herndon G. Dowling—*University of Michigan Press*, 38 p., illus., paper, $1.25. A study of the distribution, variation, life history and habits of snakes of the monotypic genus *Seminatrix* is presented.

THRESHOLD SIGNALS—James L. Lawson and George E. Uhlenbeck—*McGraw-Hill*, Vol. 24, Mass. Institute Tech. Radiation Lab. Series, 388 p., illus., $5.00. Experiments and the theoretical ideas pertaining to the problem of the detectability of a signal in noise.

TUBERCULOSIS REFERENCE STATISTICAL YEARBOOK YEAR 1948 WITH COMPARATIVE SUMMARIES FOR 1947, AND PREVIOUS YEARS—*New York Tuberculosis and Health Association*, approx. 100 p., illus., paper, free upon request to publisher, 386 Fourth Avenue, New York 16, N. Y.

WAR AND PEACE—John Foster Dulles—*Macmillan*, 274 p., paper, $1.00 (Cloth: $2.50). Analysis of the present world situation.

Science News Letter, April 22, 1950

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CARRY-HOME PACKAGE for canned goods has no base but holds the cans tightly against a wrapper by means of a simple cardboard web with an interlocking spring action that presses the cans outward. Both cardboard and outer wrapper are held in position by the lids of the cans.

Science News Letter, April 22, 1950

COIN METERS on the instrument panels of used cars require the deposit of a quarter for each five miles of operation in order to make payments on the car. A quarter must be deposited before the ignition can be turned on. A warning buzzer sounds when another coin is required to prevent ignition cutout.

Science News Letter, April 22, 1950

HUMIDITY and temperature indicator is a single instrument that indicates these weather conditions separately but where both can be seen at a glance. The thermometer uses a red liquid. The humidity-sensing element is composed of 216 inches of fine, blond, human hair.

Science News Letter, April 22, 1950

ASBESTOS-GLASS FABRIC for fire-resistant curtains is shown in the picture behind the young lady. She is holding a

spool of glass fiber in one hand and a sample of mineral asbestos in the other. The fabric is composed of glass yarns interwoven with asbestos yarns.

Science News Letter, April 22, 1950

CHRISTMAS TREE BULB, tricolored with a swirly pattern of red, green and white enamel, has a coating so tough that it will withstand at least five Christmas seasons outdoors without fading. Soon to go into production, the bulbs are promised for the next season.

Science News Letter, April 22, 1950

AIR-CONDITIONING UNIT, on the top of the cab of a giant, electrically operated crawler-type shovel handling hot slag from a steel mill, supplies clean air cooled to 80 degrees Fahrenheit to the operator. It uses fume-removing chemical canister filters, and a freon as a refrigerant.

Science News Letter, April 22, 1950

ELECTRIC CANDLE LIGHTER, recently patented, operates on household current and has an extended arm so that it can be used to reach candles in high places. The lighting element is a spiral coil mounted in the lighting head which is at the outer end of the metal arm.

Science News Letter, April 22, 1950

LADDER PLATFORM provides a comfortable resting place for the feet of a worker forced to stand for an extended period on the ladder. It has a front edge fashioned to fit over one rung while its rear edge is suspended by arms from the rung above.

Science News Letter, April 22, 1950

Do You Know?

Parsnips are one of the few vegetables that contain bromine.

Endive greens has become a popular food in America; it is of European origin.

Dicoumarol, used to prevent blood clotting in human surgery, is found in molded sweet clover.

Jet-propelled airliners will be built in America when the demand justifies the development costs.

"Nose appeal", as well as "eye appeal", can be added to the garden by the inclusion of a few perfume-laden *plants.*

Washing *potatoes* before they go to markets with synthetic detergents takes only one-fifth the time required when just plain water is used.

One reason that people like *radishes* in the early spring, it is said, is because they act as a spring tonic due to their sulfur and bromine content.

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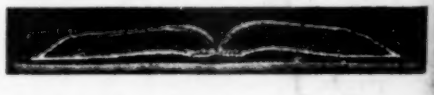

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